In the Drawings:

Please replace Fig. 1 with amended Fig. 1 enclosed herewith.

REMARKS

Claims 1-4, 6-23, and 25-31 are pending in the present application. Claims 2, 8 and 9 have been amended. Reconsideration of the claims is respectfully requested.

Figure 1 has been amended to designate the drawing as prior art per the Examiner's instructions.

35 U.S.C. §102, Anticipation

The Examiner has rejected claims 2 and 8-10 under 35 USC §102 as being anticipated by Cage (US Pat. 5,193,391). This rejection is respectfully traversed.

Cage describes a vibratory angular rate sensor that has a rigid common base 1 that forms the bottom end of a cylindrical housing 2. Tynes 3-6 extend from the base 1, brackets 10-13 are fixedly attached to the distal end of the tynes, and magnets 14-21 are fixedly attached to the brackets. Pairs of magnets form magnetic fields 22-25, and coils 26-29 fixedly attached to PC boards 30, 31are positioned in associated with respective magnetic fields. The PC boards 301, 31 are fixedly attached to the case 2. This arrangement is best illustrated in Figures 1 and 11, and its operation is best described between column 13, line 46 and column 14, line 34.

In Cage, the coils 27 and 28 are excited to cause the tynes to move back and forth along the X axis that is illustrated in Figs. 1 and 11. Magnets 14 and 21 and magnets 15 and 16 thus get closer and farther apart from each other in unison as they track the motion of the tynes. This causes the magnetic fields 22 and 25 to increase and decrease in-phase with one another and to generate in coils 26 and 29 output signals that are in-phase with one another, signifying non-rotation of the apparatus about the Z axis.

If the device is subsequently rotated about the Z axis while the X-direction vibration is maintained, gyroscopic forces add a Y-direction component to the tynes' motion. This causes the tynes to have an elliptical pattern of motion around the Z axis. As a result, the magnetic fields 22 and 25 increase and decrease out-of-phase with each other, resulting in the output signals from coils 29 and 26 becoming phase- or time-shifted away from each other as rotation about the Z axis increases. The amount of phase

or time shift between the signals from coils 29 and 26 is proportionally related to the degree of turn rate about the Z axis.

The invention recited in claim 2 of the present application requires two magnets to be mounted on a vibratable first mount and a coil disposed between the two magnets and mounted on a vibratable second mount. Both the first and second vibratable mounts extend from a common mount. The generator is adapted such that the magnets and the coil each are vibratable relative to the common mount.

If the common base 1 disclosed in Cage is considered equivalent to the "common mount" recited in claim 2 (which is not admitted but presented merely *arguendo*), there is no teaching in Cage that the coils mounted on the PC boards are arranged to vibrate relative to the common base 1. A key feature of the apparatus taught in Cage is that all electrical connections and devices are eliminated from the vibrating structure (see col. 4, lines 55-56). Electrical components and connections are provided on the PC boards for driving and sensing the motion of the tynes without those components having any physical attachments to the tynes (see col. 14, lines 54-55), and thus the PC boards cannot form part of the vibrating structure. As a consequence, the word "apparatus" in column 11, line 7 of Cage is intended to mean the tynes and magnets and not the PC boards or coils, since it is the tynes and magnets that are allowed to freely vibrate in the X or Y direction without any mechanical attachment. The Examiner thus appears to have misinterpreted the wording at col. 11, lines 5-10 of Cage.

The reference in col. 15, lines 23-40 to which the Examiner also cites is a discussion of an alternative arrangement to that described previously in the document. In this alternative arrangement, the tynes are rotated by 45° before the apparatus is used, and they are arranged to vibrate in the X' and Y' directions rather than in the X and Y directions. However, in this alternative embodiment, the PC board and coils are still not arranged to vibrate relative to the common base. Therefore, Cage does not teach all of the limitations recited in claim 2.

Some embodiments of the present invention provide the advantage that, since both the magnets and the coil are vibratable relative to the common mount, and since the magnets and coil are adapted to vibrate out of phase when excited by a common input of

vibrational energy, a maximum cutting of the magnetic flux by the movement of the coil relative to the magnets, and so the electrical current generated in the coil is also maximized, thereby providing a more efficient electromagnetic generator than that taught in Cage.

In addition, a person of average skill in the art would not be motivated to modify the arrangement disclosed in Cage such that the coils are also adapted to be vibratable relative to the common base 1. Cage teaches throughout the description that movement of the tynes in the Y direction (or Y' in the alternative embodiment) is proportional to the rate of rotation of the apparatus. In order to determine the rate of rotation, the signals produced in the coils 26 and 28 also need to be proportional to the rate of angular rotation. Thus, the coils 26 and 28 must be adapted to rotate with the base and housing of the apparatus and note relative to it, since any deflection of the coils relative to the base or housing would cause the signals in the coils not to be proportional to the rate of rotation of the apparatus. In other words, the coils 26, 28 are arranged such as to detect movement of the tynes relative to the rest of the apparatus, and thus the position of the coils 26, 28 must be fixed relative to the rest of the apparatus.

Because claims 3-4 and 6-10 depend from claim 2, they are distinguished from Cage for the reasons explained above.

Therefore, it respectfully asserted that the rejection of the claims under 35 USC §102 has been overcome and should be withdrawn.

Conclusion

It is respectfully asserted that the claims are in condition for allowance.

If there are any outstanding issues that the Examiner feels may be resolved by way of a telephone conference, the Examiner is cordially invited to contact Christopher P. O'Hagan at 972.367.2001.

The Commissioner is hereby authorized to charge any payments that may be due to CARSTENS & CAHOON, L.L.P. Deposit Account 50-0392.

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Respectfully submitted,

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